RAVICH, M.I.; YELENEVSKAYA, V.M.

Solubility isotherms 70° and 200° for the system: Na_2SO_4--NaOH--H_2O. (MLRA 8:9)
Izv.Sekt.fiz.-khim.anal. 26:290-297 '55.

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN SSSR. (Sodium salts) (Solubility)

RAVICH, M.I.,

CHERNYAYEV, I.I., akademik, red.; STYRIKOVICH, M.A., red.; CHMUTOV, K.V., red.; SHKROB, M.S., doktor tekhn.nauk, red.; RAVICH, M.I., doktor khim. nauk, red.; PIROPOL'SKIY, Z.L., red. izd-va; SHAPKIN, I.F., red. izd-va; KISELEVA, A.A., tekhn.red.

[Intra-boiler physical and chemical process, water preparation and water operations of boilers in electric power plants of high and ultrahigh parameters] Vnutrikotlovye fiziko-khimicheskie protsessy, vodopodgotovka i vodnye rezhimy kotlov na elektrostantsiiakh vysokikh i sverkhvysokikh parametrov. Moskva, 1957. 594 p. (MIRA 11:2)

1. Akademiya nauk SSSR. Komissiya po paru vsyokikh parametrov.
2. Chlen-korrespondent AN SSSR (for Styrikovich, Chmutov)
(Boilers) (Electric power plants)

RAVICH, M. I.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 406

Author : M.I. Ravich, V.M. Yelenevskaya.
Inst : -
Title : Phase Transformations in System Sodium Sulfate - Chloride - Hydroxide.

Orig Pub : Zh. neorgan. khimii, 1957, 2, No 5, 1134-1144

Abstract : The phase equilibria in the system Na_2SO_4 (I) - NaCl (II) - NaOH (III) were studied by several methods of the physical-chemical analysis. The existence of an interior crystallization field of the γ-phase with an upper temperature limit of 446 to 448° was established. The final solidification of melts takes place at 285 to 290°. In the γ-phase, the content of I by weight predominates that of II, and the content of III does not exceed 15% by weight. The boundaries of the crystallization fields of

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USSR/Physical Chemistry - Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 406

I, II, III, the γ-phase, S_1, S_2, β-III and α- solid solutions are shown on the liquidus graph, also the isotherms of solubility and graphs of x-ray photograph computations confirming the existence of the γ-phase are given. A table of thermal effects of the alloys according to heating curves is given.

Card 2/2

AUTHORS: Ravich, M. I., Yastrebova, L. F. SOV/78-3-12-27/36

TITLE: The Phase Equilibria in the System Na_3PO_4-Na_2SO_4-H_2O at 250°
(Fazovyye ravnovesiya v sisteme Na_3PO_4-Na_2SO_4-H_2O pri 250°)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 12, pp 2771-2780 (USSR)

ABSTRACT: The solubility of the system Na_3PO_4-Na_2SO_4-H_2O at 250° as well as the solid phase which forms at this temperature were investigated. Two phases with varying composition were found. The α-phase contained 24-45% Na_2SO_4, and the β-phase contained 0-15% Na_2SO_4. The α-phase is characterized by the refractive index, which varies with changes in composition from 1.480 (37% Na_2SO_4) to 1.489 (24% Na_2SO_4). The β-phase is anisotropic and is characterized by its refractive index, which also varies with the composition: N_p = 1.489 and N_g = 1.494 (at 15% Na_2SO_4) and N_p = 1.495 and N_g = 1.510 (in the absence of Na_2SO_4). The X-ray studies made show that the two phases belong to different crystal systems. From the radiographs it is apparent

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SOV/78-3-12-27/36

The Phase Equilibria in the System Na_3PO_4-Na_2SO_4-H_2O at 250°

that for the α-phase a change in composition leads to a conversion to Na_3PO_4. The thermograms of the α- and β-phases show thermal effects which correspond to the dehydration. In the dehydration the α-phase remains isotropic, although the refractive index decreases down to 1.460-1.471. In the dehydration of the β-phase (with more than 10% Na_2SO_4) this phase also becomes isotropic. The X-ray studies of the isotropic samples, prepared by dehydration of the α- and β-phases, are practically identical and do not differ from the X-ray pictures of the non-heated phase. In the crystallization of the α-phase no excess of alkali was found, but, on the contrary, with the crystallization of the β-phase Na_3PO_4,Na_2SO_4, and Na_2HPO_4 crystallized out simultaneously. With an increase in the Na_2SO_4 content the amount of Na_2HPO_4 in the solid phase becomes less and the alkalinity of the liquid phase decreases. With a Na_2SO_4 content of 14% the amount of Na_2HPO_4 present is zero. From the results obtained it follows that the sodium phosphate and the sodium sulfate form two double salts, the isotropic

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SOV/78-3-12-27/36

The Phase Equilibria in the System $Na_3PO_4-Na_2SO_4-H_2O$ at 250°

α-phase and the anisotropic β-phase.
There are 10 figures, 3 tables, and 9 references, 6 of which are Soviet.

SUBMITTED: November 20, 1957

Card 3/3

RAVICH, M.I.

Phase equilibia in water - salt systems at high temperatures.
Itogi nauki: Khim.nauki 4:122-138 '59. (MIRA 13:4)
(Phase rule and equilibrium) (Salts)

5(2), 5(4)

AUTHORS: Ravich, M. I., Yastrebova, L. F. SOV/78-4-1-32/48

TITLE: On the Solid Phases Crystallizing in the Na_3PO_4-Na_2SO_4-H_2O System at High Temperatures (200-350°) (O tverdykh fazakh, kristallizuyushchikhsya v sisteme Na_3PO_4-Na_2SO_4-H_2O pri vysokikh temperaturakh (200-350°))

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 169-181 (USSR)

ABSTRACT: The heterogeneous equilibrium in the Na_3PO_4-Na_2SO_4-H_2O system was investigated at 200, 300, and 350°. At 200° the solubility of Na_3PO_4 is higher than at room temperature. In this system the isotropic α phase and the anisotropic β phase crystallize at 200 and 250°. At 200° the β phase of approximately constant composition (14-15% Na_2SO_4) is an almost pure anisotropic double salt. The solid phases were investigated by crystallo-optical, radiographic, and thermographic analyses. At 200° there is no Na_2HPO_4 compound in the β phase. The results show that at temperatures higher than 210° the

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On the Solid Phases Crystallizing in the Na_3PO_4-Na_2SO_4-H_2O System at High Temperatures (200-350°) SOV/78-4-1-32/48

anhydrous Na_3PO_4 salt is crystallized from aqueous solutions of Na_3PO_4. At temperatures lower than 210° the semihydrate $Na_3PO_4 \cdot 1/2H_2O$ crystallizes. The semihydrate does not form solid solutions with Na_2HPO_4. At 300°C the same solid phases crystallize as at 250°: Na_2SO_4, α and β phase. In the β phase the amount of Na_2HPO_4SO is reduced in the same way as at 250° with an increase in Na_2SO_4 content; and with 14-15 wt.% Na_2SO_4 there is no more Na_2HPO_4. The existence of the α and β phase in the Na_3PO_4-Na_2SO_4-H_2O system as balanced solid phases at 300° is caused by increased vapor pressure. At 350° the crystallization of a phase of variable composition containing sodium phosphate and sodium sulfate takes place, while alkalinity rises in the solid phase. In the temperature range from 300 to 350° a polymorphic transformation takes place in the neutral sodium orthophosphate with a change in the crystal

Card 2/3

On the Solid Phases Crystallized in the Na_3PO_4-Na_2SO_4-H_2O System at High Temperatures (200-350°) SOV/78-4-1-32/48

lattice. There are 6 figures, 8 tables, and 10 references, 4 of which are Soviet.

SUBMITTED: March 1, 1958

Card 3/3

RAVICH, M.I.; YASTREBOVA, L.F.

Solid phases crystallizing in the Na_3PO_4 - Na_2SO_4 - H_2O system at high temperatures (200 - 350°C). Zhur.neorg.khim. 4 no.1: 169-181 Ja '59. (MIRA 12:2)
(Sodium phosphate) (Sodium sulfate) (Crystallization)

5(2)

SOV/78-4-9-29/44

AUTHORS: Ravich, M. I., Borovaya, F. Ye.

TITLE: Phase Equilibria in the Quaternary System Sodium Sulphate - -chloride - -hydroxide - Water at 350 and 400°

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 2100-2115 (USSR)

ABSTRACT: The present paper is a continuation of an investigation of the formation of liquid and solid phases in the presence of high-pressure steam (Refs 1, 2). Figure 1 shows the flask used for the solubility determination, figure 2 the autoclave used for determining the steam pressure. The working process has been described in references 1-5. Figure 3 shows the composition of the saturated solutions in the range of crystallization of NaCl on the basis of p - x curves. On account of the very flat intersections of these curves it was decided that it would be better to determine the phase composition analytically. The compositions of the saturated solutions of the system mentioned in the title and the respective steam pressures are given in tables 1 and 2. Figures 4 and 5 show the results of the direct determination of the steam pressure. It was assumed on account of the sharp bends in the steam pressure curves that a new phase had formed which

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Phase Equilibria in the Quaternary System SOV/78-4-9-29/44
Sodium Sulphate - -chloride - -hydroxide - Water at 350 and 400°

was called γ-phase and found to be $3Na_2SO_4 \cdot 2NaOH$. Diagrams 9-12 show the borders of the crystallization ranges of Na_2SO_4 and the γ-phase. Within the temperature range investigated phases containing NaOH can crystallize only from highly concentrated solutions with steam pressures not to exceed 36 - 38 kg/cm^2 . Between 350 and 400° the range of crystallizing salts diminishes as the steam pressure is increased, while the range of unsaturated liquid solutions grows. Under such conditions NaOH and NaCl dissolve considerable amounts of Na_2SO_4 so that the conditions of crystallization of Na_2SO_4 are changed essentially in such mixtures and in the presence of water vapor. There are 13 figures, 2 tables, and 20 references, 14 of which are Soviet.

SUBMITTED: May 28, 1958

Card 2/2

SOV/78-4-1o-26/4o

5(2)

AUTHORS: Borovaya, F. Ye., Ravich, M. I.

TITLE: Phase Equilibria in the Quaternary System Sodiumsulfate - -chloride - -hydroxide - Water at 45o, 5oo and 55o°

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1o, pp 2335 - 2346 (USSR)

ABSTRACT: The above system had been already investigated by the authors at 35o and 4oo° (Ref 1). The extension of the investigation up to 55o° yielded at this temperature a distinct gas formation, so that the vapor pressure had to be corrected, accordingly. The composition of the saturated solutions and the vapor pressures are given in table 1. In figures 1-3 the vapor pressures in the coordinates vapor pressure - water content are graphed for the three temperature stages. The solubility- and vapor pressure isotherms, determined by means of the diagrams figures 4-8 are reproduced as projection of the isobars (Figs 9-11) and isohydric lines (Figs 12-14) onto the triangle of the composition of the anhydrous components. At 45o° sodium sulfate, sodium chloride and another compound the composition of which most probably corresponds to the formula

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Phase Equilibria in the Quaternary System Sodiumsulfate - SOV/78-4-10-26/40
Chloride- -hydroxide - Water at 450, 500 and 550°

$3Na_2SO_4 \cdot 2NaOH$, crystallize from the aqueous solutions of the system. This latter compound only crystallizes from solutions which are so highly concentrated, that their vapor pressure at 450° amounts only to some atmospheres. At 500 and 550° only sulfate and chloride occur as solid phases. Between 450-550° the range of the crystallized salts decreases with increasing vapor pressure and the range of the unsaturated liquid solution increases. Highly concentrated solutions of 450 and 500° considerable quantities of sodium sulfate. By this the conditions of crystallization of this salt vary as compared with solutions which contain no other water-soluble salts. There are 15 figures, 1 table, and 13 references, 10 of which are Soviet.

SUBMITTED: May 28, 1958

Card 2/2

YELENEVSKAYA, V.M.; RAVICH, M.I.

Solubility of lithium sulfate and lithium carbonate in water at high temperatures. Zhur.neorg.khim. 6 no.10:2380-2386 O '61. (MIRA 14:9)

(Lithium sulfate) (Lithium carbonate) (Solubility)

S/078/63/008/001/020/026
B124/B186

AUTHORS: Ravich, M. I., Yastrebova, L. F.

TITLE: Phase equilibria in the system LiCl - H_2O at high temperatures

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 8, no. 1, 1963, 202 - 207

TEXT: The solubility of lithium chloride in water over the temperature range 250 - 556°C was investigated and the water-vapor pressure above such solutions at high temperatures was determined. To measure the solubility, the curves p - x (pressure versus concentration at constant temperature) and, in certain cases, also the curves p - t were determined, the break corresponding to the transition from unsaturated to saturated solutions and allowing the determination of concentration and water-vapor pressure of the saturated solutions at various temperatures. A shaking autoclave was used for the experiments. With rising temperature the solubility of LiCl in water also rises and reaches 93.5% by weight at 556°C; this rise is continuous, so that at high enough temperatures the saturated solutions may be regarded as an anhydrous solution of the molten salt. This course ends at 606°C, the melting point of LiCl. The water-vapor pressure curve of the

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Phase equilibria in the system... S/078/63/008/001/020/026
B124/B186

saturated lithium chloride solutions is characterized by a maximum which lies at 45 kg/cm^2 and is much lower than that found for KCl (over 200 kg/cm^2) and NaCl (about 400 kg/cm^2). This is ascribed not only to the lower melting point of lithium chloride as compared to potassium and sodium chlorides but also to the hydrophilic properties of the lithium ion observed at high temperatures. There are 5 figures and 2 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

SUBMITTED: March 29, 1962

Card 2/2

YASTREBOVA, L.F.; BORINA, A.F.; RAVICH, M.I.

Solubility of calcium molybdate and calcium tungstate in aqueous solutions of potassium and sodium chlorides at high temperatures. Zhur.neorg.khim. 8 no.1:208-217 Ja '63. (MIRA 16:5)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Calcium molybdate) (Calcium tungstate) (Alkali metal chlorides)

RAVICH, M.I.; BOROVAYA, F.Ye.

Phase equilibria in the system sodium sulfate - water at high temperatures and pressures. Zhur.neorg.khim. 9 no.4:952-974 Ap '64. (MIRA 17:4)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

BORINA, A.F.; RAVICH, M.I.

Cocrystallization of calcium molybdate and tungstate from their solution in aqueous lithium chloride solution. Zhur.neorg.khim. 9 no.4:975-981 Ap '64. (MIRA 17:4)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

L 19642-65 EWT(m)/EWP(b)/EWP(t) ASD(p)-3 JD IJP(c)/AS(mp)-2/ASD(m)-3/AFWL/SSD/AEDC(a)/
ACCESSION NR: AP5003161 S/0078/64/009/008/1960/1973

AUTHOR: Ravich, M. I.; Borovaya, F. Ye.

21

TITLE: Phase transformations in the lithium sulfate--water system at high temperatures and pressures

21 21 B

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 8, 1964, 1960-1973

TOPIC TAGS: lithium, sulfate, high temperature effect, high pressure, pressure effect, allotropic transformation

ABSTRACT: The authors carried out determinations of the solubility of lithium sulfate in water at temperatures below critical (248, 298, 343, and 373°C), but at pressures exceeding the vapor pressures of saturated solutions (up to ~ 1000 kg/cm^2), i.e., in the absence of the vapor phase (liquid solutions), and at temperatures exceeding the critical temperature (388 and 398°C) and pressures up to ~ 1000 kg/cm^2 (fluid solutions).

Determinations were also made whose results give a partial outline of the upper three-phase and two-phase regions and determine the values of the parameters corresponding to the critical point of the lithium sulfate--water system. These determinations were made at temperatures and pressures up to

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ACCESSION NR: AP5003161

500°C and 2100 kg/cm^2 in certain cases (S. N. Andreyeva, T. G. Myagkova and V. V. Kazakov participated in the experimental part of the work).

An experimental study of phase equilibria in the lithium sulfate--water system established the following:

1) Within the limits of the parameters studied, at constant temperature, the solubility of Li_2SO_4 in water increases with pressure to the extent that concentrated solutions of this salt can be obtained even above the critical temperature;

2) The temperature coefficient of the solubility of Li_2SO_4 is negative at relatively low pressures, and positive at relatively high pressures. The sign of this coefficient changes at 800-850 kg/cm^2;

3) The change of solubility isotherms with temperature of Li_2SO_4 in the liquid and fluid phase indicates the proximity of the upper three-phase and two-phase regions;

4) The upper three-phase region is characterized by a weakly expressed pressure maximum (~ 860 kg/cm^2) at 410-420°C;

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ACCESSION NR: AP5003161

5) The critical point of the upper three-phase region, which is apparently the second critical point Q of the Li_2SO_4--H_2O system is associated with the following parameters: ~ 395°C, ~ 850 kg/cm^2, at a Li_2SO_4 content of ~ 30 wt %;

6) In the upper three-phase region, as temperature increases, the concentration of Li_2SO_4 in the liquid solution rises quickly, reaching 60 wt % at 422°; it decreases in the vapor region down to fractions of a percent.

7) Between 395 and 500°C, the critical solutions of the upper two-phase region are characterized by pressures from ~ 850 to ~ 2080 kg/cm^2, and a content of about 30 wt % Li_2SO_4;

8) The phase equilibria in the supercritical regions of the Li_2SO_4--H_2O, and Na_2SO_4--H_2O system have the same character. Orig. art. has: 12 graphs, 4 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 11Feb64 ENCL: 00 SUB CODE: IC, SS

NO REF SOV: 004 OTHER: 006 JPRS

Card 3/3

RAVICH, M.I.; BOROVAYA, F.Ye.

Solubility of lithium sulfate in water at elevated temperatures and pressures. Dokl. AN SSSR 155 no.6:1375-1378 Ap '64. (MIRA 17:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova AN SSSR. Predstavleno akademikom I.I.Chernyayevym.

RAVICH, M.I.; BOROVAYA, F.Ye.

Solubility of sodium carbonate in water at elevated temperatures and pressures. Dokl. AN SSSR 156 no. 4:894-896 Je '64.
(MIRA 17:6)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova AN SSSR. Predstavleno akademikom I.I.Chernyayevym.

[illegible]

Solubility of sodium fluoride at elevated temperatures. Zhur. neorg. khim. 10 no.1:204-208 Ja '65. (MIRA [illegible])

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR. Submitted June 10, 1964.

RAVICH, M.I.; BORINA, A.F.

Co-crystallization of potassium molybdate and tungatate from their solution in an aqueous solution of KCl + NaCl. Zhur. neorg.khim. 10 no.3:724-727 Mr '65. (MIRA 18:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR.

RAVICH, N.

Founders of the first Russian shipyards. Vympel 11 no.18:19-20 S '48. (MIRA 12:9)

(Bazhenin family) (Shipbuilding)

RAVICH, N.

Most urgent needs. Prom.koop. no.6:21 Je '57. (MLRA 10:7)

1. Sotrudnik respublikanskoy gazety "Kommunist."
(Erevan--Cooperative societies)

RAVICH, Nikolay Aleksandrovich; KOSTINSKIY, D.N., red.; NEFED'YEV, V.P.,
red.; GLEYKH, D.A., tekhn. red.

[In the center of Europe; Czechoslovak sketches] V tsentre
Evropy; chekhoslovatskie zarisovki. Moskva, Geografgiz, 1962.
85 p. (MIRA 16:5)
(Czechoslovakia--Description and travel)

RAVICH, R.D.

Some data on the state of automatic translation. NTI no.6:37-42 '64. (MIRA 17:9)

L 16163-65 EWT(d)/BXT/EED-2/EWP(l) Po-4/Pq-4/Pg-4/Pk-4 RAEM(i)/ESD(dp)/
ASD(a)-5/AFMD(p)/AFTC(b)/IJP(c) BB/GG

ACCESSION NR: AP4048654 S/0315/64/000/006/0037/0042

AUTHOR: Ravich, R. D.

16C B.

TITLE: Some data on the status of automatic translation. Review. Part II

SOURCE: Nauchno-tekhnicheskaya informatsiya, no. 6, 1964, 37-42

TOPIC TAGS: algorithm, automatic translation, compiler language, translation programming

ABSTRACT: The first part of the paper was published in "NTI" 1964, No. 5, pp. 40--43. The work being done in various scientific institutions on semantic analysis, intermediary language, synthesis, formalization of algorithms, and use of computer techniques in linguistic research are described. Soviet work in semantic analysis includes the following: semantic research done by the Laboratory for Machine Translation 1 MGPIIYa, connected with a study of the possi-

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ACCESSION NR: AP4048654

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bility of differently rephrasing a single meaning. It is proposed to compile an algorithm for the analysis of the meaning of Russian words and their rephrasing in the same language. Methods of distributive and transformation analysis are used for the separation of semantic fields at the Institute for Russian Language AN SSSR. The principles of organization and analysis of the structures of a thesaurus, and the development of methods for determining the concept of "meaning information" is one of the projects of the automatic translation group of VINITI. The same group proposes to formulate rules for an analysis of semantic homonyms using electrotechnical text as the raw material. Problems involved in a semantic intermediary language and its application for automatic translation purposes are considered by the mathematic linguistics group of the Mathematics Institute, Siberian Dept. AN SSSR. The first variants of translation of mathematical text into the semantic language and vice versa have been prepared. Experimental work on the translation from numerous languages using a specific intermediary language,

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ACCESSION NR: AP4048654

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with a dictionary containing 65 "semoglyphs," is being carried out at the experimental laboratory of machine translation of LGU. Work in the field of construction of information languages for geometry, electronics, and computation techniques is being carried out at VINITI, Institute of Cybernetics AN UkrSSR, and other organizations. An algorithm for the translation from the language of the calculus of predicates into Russian is part of a general algorithm for the translation from an information-logical language into Russian (VINITI). In the field of synthesis, a direct algorithm for morphological synthesis of Russian and rules for construction of the morphological part of the synthesized dictionary has been developed at the NIIMM LGU. Work on compilation of an experimental variant of independent syntactic synthesis of the Russian language is carried out in MIAN and in IYa AN SSSR. The first variant of a grammar for Russian positional synthesis, where the position of the word relative to a "master" is determined, has been obtained, and an algorithm constructed for this variant, at NIIMM LGU. An algorithm for the

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synthesis of the Georgian language was produced and programmed at the Institute of Electronics GruzSSR. A small generating grammar synthesizing Russian phrases was produced on the basis of mathematical texts at MIAN. Approximately 600 phrases were obtained in 1962 with the "Strela" computer. Among the attempts made to use a standardized unified language for formal recording of logical algorithms, the NIIMM LGU developed a language for formal recording of complex logical algorithms. This micro-language, adapted for a three-address machine, is used for direct recording of universal algorithms. A system of simple operators for linguistic algorithms, the first in the SSSR, was developed at MIAN. The system for formal operator recording of algorithms IYa AN SSSR -- LINGVAL -- can be used to write down not only algorithms for automatic analysis, but also other algorithms that process language objects. "The author thanks I. A. Mel'chuk whose advice he used continuously in working on the review, and also L. N. Iordanskaya, V. Z. Sannikov, and Yu. A. Shreyder for many valuable remarks."

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L 16163-65

ACCESSION NR: AP4048654

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ASSOCIATION: None

SUBMITTED: 18Feb64

ENCL: 00

SUB CODE: DP

NR REF SOV: 027

OTHER: 026

Card 5/5

RAVICH, V.M., inzh.
Briquetting charge materials for open-hearth furnace smelting.
Stal' 22 no.6:511-513 Je '62. (MIRA 16:7)

1. Moskovskiy gornyy institut.
(Open-hearth process) (Briquets)

RAVICH, V.M., inzh.

Coal briquetting. Ugol' Ukr. 5 no.3:44-45 Mr '63. (MIRA 14:3)
(Briquets(Fuel))

L 18849-65 EWT(m)/EWP(t)/EWP(b) IJP(c)/RAEM(a)/AFWL/ESD(gs)/ESD(t) JD

ACCESSION NR: AP4043341 S/0181/64/006/008/2281/2288

AUTHORS: Imenkov, A. N.; Meskin, S. S.; Nasledov, D. N.; Ravich, V. N.; Tsarenkov, B. V.

TITLE: Electrical properties of pn tunnel junctions in gallium arsenide B 27

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2281-2288

TOPIC TAGS: gallium arsenide diode, pn junction, single crystal, tunnel current, temperature dependence, forbidden band

ABSTRACT: Forward and reverse branches of the current-voltage characteristics of p-n tunnel junctions in GaAs were investigated between 77 and 425K. The junctions (10^{-5} cm^2 in area) were produced in single-crystal Zn-doped p-type material by alloying with tin. Direct current or voltage pulses (to avoid heating) were used. The forward (tunnel and recombination) current rose rapidly to a

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maximum at 0.1 V; this was followed by an exponential fall of the current [$I \sim \exp(-qU/\mathcal{E}_1)$] nearly to zero at 0.5--0.7 V and an exponential rise [$I \sim \exp(qU/\mathcal{E}_2)$] on further increase of the voltage. The values of $\mathcal{E}_1$ and $\mathcal{E}_2$ were independent of temperature, which indicated the presence of levels in the forbidden band. The forward current was little affected by temperature due to a weak temperature dependence of the tunnel transition probability and of the Fermi function. The Fermi level at room temperature was $\zeta_p = 0.08$--0.15 eV for the p-region and $\zeta_n = 0.26$--0.32 eV for the n-region. The reverse tunnel current increased, linearly at $U \ll (\zeta_{p,n}/q)$ and quadratically at $U > (\zeta_{p,n}/q)$, with rise of the voltage across the junction. This indicated that at energies $\mathcal{E} \gtrsim \zeta_{p,n}$ the band involved in the reverse tunnel current was parabolic. The reverse

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ACCESSION NR: AP4043341

4

current varied very little with temperature, again due to a weak temperature dependence of the tunnel transition probability and of the Fermi function. "The authors are grateful to F. Kh. Kreyndel' and G. V. Kuznetsova for help with the work and to R. F. Kazarinov for a discussion of the results." Orig. art. has: 6 figures and 5 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute, AN SSSR)

SUBMITTED: 10Jan64 ENCL: 00

SUB CODE: EC, SS NR REF SOV: 004 OTHER: 007

Card 3/3

1c

L 33954-65 EWT(l)/EWT(m)/T/EWP(t)/EWP(b)/EWA(h) Pz-6/Peb JD/AT

ACCESSION NR: AP5005313 S/0181/65/007/002/0634/0636

AUTHOR: Imenkov, A. N.; Kozlov, M. M.; Meskin, S. S.; Nasledov, D. N.; Ravich, V. N.; Tsarenkov, B. V.

TITLE: Recombination radiation in GaAs tunnel p-n junctions 21 35

SOURCE: Fizika tverdogo tela, v. 7, no. 2, 1965, 634-636 34 B

TOPIC TAGS: tunnel effect, tunnel p n junction, p n junction, recombination radiation, recombination, gallium arsenide

ABSTRACT: The dependence of the integral intensity of radiation Φ on the current I in the range of current densities 50—10^4 amp/cm^2 can be represented in the form of the sum of two members $\Phi = \Phi_2 + \Phi_3 = A(T)I^n + \Phi_3(T,I)$, where the member $\Phi_3(T,I)$ is the part of the radiation intensity which is added to the intensity Φ_2. The fact that at a certain voltage the volt-ampere characteristic and the curve of the dependence of the radiation intensity on voltage display a "hump" indicates that the excess currents connected with tunnel transitions contribute to the radiation. Contrary to the findings of other researchers (e.g., Anderson, R., Proc. IEEE, 51, 1963, 610), no radiation in the region of

L 33954-65

ACCESSION NR: AP5005313

negative conductivity of the tunnel diode was detected. Orig. art. has: 2 figures and 2 formulas. [ZL]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe, AN SSSR, Leningrad (Physical-Technical Institute, AN SSSR)

SUBMITTED: 31Jul64 ENCLOSURE: 00 SUB CODE: SS, NP

NO REF SOV: 001 OTHER: 004 ATD PRESS: 3209

Card 2/2

IMENKOV, A.N.; KOZLOV, M.M.; MESKIN, S.S.; NASLEDOV, D.N.; RAVICH, V.N.;
TSARENKOV, B.V.

Electroluminescence spectra of strongly degenerate gallium arsenide. Fiz. tver. tela 7 no.3:775-780 Mr '65. (MIRA 18:4)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR, Leningrad.

[illegible]
TSARENKOV, B.V.

Recombination radiation from tunnel p - n-junctions in GaAs.
Fiz. tver. tela 7 no.2:634-636 F '65. (MIRA 18:9)

1. Fiziko-tekhnicheskiy institut imeni A.F.Ioffe AN SSSR, Leningrad.

lc

L 31082-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

S/0181/65/007/003/0775/0780

ACCESSION NR: AP5006880

AUTHOR: Imenkov, A. N.; Kozlov, M. M.; Meskin, S. S.; Nasledov, D. N.; Ravich, V. N.; Tsarenkov, B. V.

36

TITLE: Electroluminescence spectra of strongly degenerate gallium arsenide

27 27 35 B

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 775-780

TOPIC TAGS: gallium arsenide, semiconductor, electroluminescence, p n junction, recombination radiation, radiative recombination

ABSTRACT: An investigation was made of the injection electroluminescence of GaAs tunnel p-n junctions at temperatures of 77 and 293K. In preparing the diodes, zinc was diffused into an n-type GaAs monocrystal up to hole concentrations of $\sim 5 \cdot 10^{19}$ cm^{-3} in a 10—20 micron surface layer. The tunnel p-n junction was fabricated by diffusing tin into the p-side of GaAs. The emission was found to vary strongly with injection current. Recombination radiation spectra showed a peak which with increasing current densities was shifted toward higher photon energies (from 1.0 to 1.445 ev at 77K). Other maxima independent of the injection current were also present. A very distinct peak at 1.42 ev was observed at 77K. Analysis of the experimental data showed that at small injection current densities (less

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ACCESSION NR: AP5006880

than 1—$2 \cdot 10^4$ amp/cm^2 electroluminescence depends on the properties of tunnel diodes, while at higher current densities it is determined by the properties of the p-region. The current-independent peaks were attributed to tunneling of electrons into deep-lying levels in the forbidden band and subsequent radiative recombination. Orig. art. has: 6 figures. [CS]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute, AN SSSR)

SUBMITTED: 15Aug64 ENCL: 00 SUB CODE: SS, OP

NO REF SOV: 005 OTHER: 006 ATD PRESS: 3198

Card 2/2

RAVICH, V.S.

Planning and the accounting on the basis of 100-percent completed industrial units. Trudy NTO sud.prom. 8 no.2:107-111 '59.
(MIRA 13:5)

(Shipbuilding--Accounting)

RAVICH, V. V., VEDMINA, YE. A., GOLOSOVA, T. V., YERMOLYEVA, Z. V.,
VAYSBERG, G. YE., BRAUDE, A. I., AFANASYEVA, T. I., GIVENTAL, N. I.,
FURER, N. M., FOMINA, I. P., and NAVASHIN, S. M. (USSR)

"Biological Effects of some Polysaccharides of Bacterial Origin."

Report presented at the 5th International Biochemistry Congress,
Moscow, 10-16 Aug 1961

RAVICH, Ye.D.

Machine for the gas cutting of pipes. Suggested by E.D.Ravich. Rats.i izobr.predl.v stroi. no.14:80-82 '60. (MIRA 13:6)

1. Nachal'nik tsekha zavoda No.4 Santekhoborudovaniye. Po materialam tresta Santekhmontazh-62, Glavleningradstroya, Leningrad, kanal Griboyedova, 36.

(Gas welding and cutting)
(Pipe cutting)

24.7700
~~24 (3), 9 (3)~~

67309

AUTHORS: Moyzhes, B. Ya., Ravich, Yu. I. SOV/181-1 -8-14/32

TITLE: On a Possibility of Detecting Excitons in Germanium and Silicon

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 8, pp 1243 - 1245 (USSR)

ABSTRACT: According to the authors' opinion excitons in germanium (besides the optical effects) should become conspicuous in the kinetics of photoconductivity at low temperatures (around 1.5°K). In any domain of germanium many pairs are supposed to be produced by light. An electron and a hole may combine to form an exciton and emit a phonon. Under certain conditions this process is more probable than ordinary recombination. At 1.5°K the forming excitons are stable concerning dissociation. If exciton lifetime with respect to annihilation is of the same order as the usual lifetime of minority carriers in germanium, then an observation of exciton diffusion and light-induced dissociation might be expected. With exciton concentration of the order 10^{15}, the electrons and holes combined to excitons may contribute to the electric conductivity in analogy to the

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On a Possibility of Detecting Excitons in Germanium and Silicon SOV/181- 1 -8-14/32

"impurity band". Electron-hole combination probability yielding a ground-state exciton was estimated for the simple Mott model with isotropic actual masses, i.e., similar to the manner in which A. I. Ansel'm and Yu. A. Firsov ascertained the exciton free path in an atomic crystal. Binding energy is mainly transformed into kinetic energy of the exciton, and the forming phonon compensates for the exciton quasi-momentum. An expression is written down for the number Q of binding events per cm^3 and per sec. When introducing the numerical values into Q, the anisotropy of the effective electron masses and the valency band edge degeneration in germanium and silicon must be considered. By means of the effective mass values obtained from cyclotron resonance, the ground-state energy of an exciton resulting from an electron and a heavy hole can be estimated: 0.005 ev for germanium and 0.017 ev for silicon. Subsequently, a formula is derived for the estimation of the possible electron (n) and exciton (N) concentration. When 0.2 w of radiant energy in the range of the continuous absorption spectrum fall upon 1 cm^2 of an aluminum plate 100 μ thick ($I \sim 10^{20}$ pairs/cm^3.sec),

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On a Possibility of Detecting Excitons in Germanium and Silicon SOV/181-1-6-14/32

then with a capture time of $\tau = 10\ \mu$ sec of the electron (hole) from the exciton the respective concentrations are found to be $n \sim 10^{13}$ 1/cm^3 and $N \sim 10^{15}$ 1/cm^3. Though rough, these estimations show that in the experiment suggested by the authors observable exciton concentrations can be attained. The authors thank A. I. Ansel'm and G. Ye. Pikus for their critical remarks. There are 9 references, 6 of which are Soviet.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED: August 5, 1958

Card 3/3

84504

S/181/60/002/010/005/051
B019/B070

24.7700 (1043, 1143, 1559)

AUTHOR: Ravich, Yu. I.

TITLE: Theory of the Photomagnetic Effect in Semiconductors With Complicated Energy Bands

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2366-2369

TEXT: A calculation is made of the photomagnetic effect in semiconductors with complicated energy bands, particularly in germanium and silicon. First of all, the author quotes equations (1) given by Roosbroeck (Ref. 1). These give a relation between the density of electron and hole currents, and the gradient of the carrier concentration, and the electric and magnetic fields. The following assumptions are made for further calculations: 1) The semiconductor plate is sufficiently large and thick for the boundary effects to be neglected. 2) All quantities are independent of time. 3) The excess concentration of electrons and holes are equal to each other. 4) The carrier lifetime and the rate of surface recombination are constant. 5) The thickness of the semiconductor plate is more than the socalled ambipolar diffusion length L. 6) The reciprocal absorption

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Theory of the Photomagnetic Effect in Semiconductors With Complicated Energy Bands

S/181/60/002/010/005/051
B019/B070

coefficient of light is much smaller than L. 7) L does not depend on the excess carrier concentration. Formulas are derived for the current appearing in the external circuit and the potential on the electrodes. Then, the calculation of the conductivity tensor for semiconductors in magnetic field, as developed by Abeles et al. (Ref. 10) and Gold et al. (Ref. 11) is discussed. It is then shown that the formulas considered so far permit the calculations for semiconductors whose conduction band has the same structure as germanium, with two types of isotropic holes. Of special interest are the transverse photomagnetic effect in a magnetic field parallel to the illuminated surface, and that in a field perpendicular to the illuminated surface of the semiconductor. Both these effects have so far not been observed in isotropic semiconductors. It is found that if the symmetry axis of the fourth order and the magnetic field are perpendicular to the illuminated surface, the photomagnetic effect in germanium is zero. Finally it is shown that it is possible to conclude from the difference between the theoretical value of the anisotropy coefficient K and its experimental value, the role of the angular dependence of the relaxation times of the electrons in anisotropic photomagnetic effects. The author thanks B. Ya. Moyzhes for help in the experiment

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Theory of the Photomagnetic Effect in Semiconductors With Complicated Energy Bands

S/181/60/002/010/005/051
B019/B070

and I. I. Farbshteyn for help in the evaluation of the results. I. K. Kikvin and Yu. A. Bykovskiy are mentioned. There are 1 figure and 11 references: 6 Soviet and 5 US.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors of the Academy of Sciences of USSR, Leningrad)

SUBMITTED: March 17, 1960

X

Card 3/3

23132
S/181/61/003/005/037/042
B125/B202

34.7700 (1043, 1137, 1395)

AUTHOR: Ravich, Yu. I.

TITLE: Determination of the characteristic parameters of minority carriers in semiconductors from measurements of photoconductivity and photomagnetic effect

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1601-1611

TEXT: The author deals with the possible determination of the mobility of minority carriers and the constants that characterize volume recombination and trapping phenomena when the forbidden band contains localized levels. Furthermore, he develops a theory of the photomagnetic effect and photoconductivity for the case of nonlinear recombination for a specimen. In these cases, the mobilities of the minority carriers and the recombination constants are accurately determined. The method of determining the mobility of minority carriers by measuring the photomagnetic effect in strong magnetic fields is suited for semiconductors with only one type of impurity conductivity (e.g. tellurium). The short-circuit current of the photomagnetic effect in an infinitely long plate may be written as $J = XIl$ (1),

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B125/B202

Determination of the ...

where l denotes the width of the specimen; is the integral over the thickness of the specimen with respect to the density component of the electron current perpendicular to the plate;

$I = -\int_0^d i_x^e \, dx$ and X is a certain combination of the components of the conductivity tensors of electrons and holes in the presence of a magnetic field with relaxation time independent of the carrier energy and with non-degenerate bands: $X = (\mu_e + \mu_h)H/c$. Here, H denotes the magnetic field strength; μ_e and μ_h are the mobilities of electrons and holes.

$\sigma = e(\mu_e + \mu_h)\frac{1}{h}P$ (2) $\left(P = \int_0^d \frac{p + bn}{1 + b}\right)$ is the photoconductivity of the specimen. h denotes the length of the plate, $b = \mu_e/\mu_h$; p and n are the excess concentrations of the free holes and electrons. The author calculates the short-circuit amperage. Effect of the trapping levels: Under steady conditions the equations

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Determination of the ...

$$L^2\frac{d^2n}{dx^2}-n=0,$$

(6)

$$L^2=\tau_L D,$$

$$\tau_L=\frac{\tau_e(n_0+n)^{-1}+\tau_h(p_0+p)^{-1}}{(n_0+n)^{-1}+(p_0+p)^{-1}},$$

(7)

$$D=\frac{kT}{e}\cdot\frac{(n_0+n)^{-1}+(p_0+p)^{-1}}{\frac{1}{\mu'_e}(n_0+n)^{-1}+\frac{1}{\mu'_h}(p_0+p)^{-1}},$$

(8)

$$\mu'_{e,h}=\frac{\mu_{e,h}}{1+\mu^2_{e,h}\frac{H^2}{c^2}}.$$

hold for the diffusion of the electrons produced by the light on the surface of the specimen. (6) only holds when L is independent of n. (6) can then be easily solved for the corresponding boundary conditions and

$I = egD(s + \frac{D}{L})$ (10), $P = g\tau_p \frac{D}{L}(s + \frac{D}{L})$ (11) hold for a thick plate ($d \gg L$)

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Determination of the ...

where g pairs are produced on a surface unit per 1 sec. The following cases hold for L = const. With a weak intensity of illumination

$$r=\frac{1}{\tau_L}\frac{p_0 n+n_0 p}{p_0+n_0}, \qquad (14)$$

$$r_s=s\frac{p_0 n_s+n_0 p_s}{p_0+n_0}. \qquad (15)$$

hold for volume and surface recombination. In high-alloy semiconductors $(a \gg \Gamma)$ with $p < p_0$, τ_L is equal to the lifetime τ_e of the minority carriers. With strong capture of the electrons $(\Gamma \gg 1)$ $\tau_L = 2\tau_e$, $s = s_e/2$, $D = (kT/e)\mu_e'$ holds. The effective mobility is

$$\mu=\sqrt{\mu_e\mu_h\frac{(p_0+p)\mu_e+(n_0+n)\mu_h}{(p_0+p)\mu_h+(n_0+n)\mu_e}} \qquad (16).$$

Special cases: a p-type semiconductor, weak illumination, no traps:

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Determination of the ...

$\mu = \mu_e$; strong signal: $\bar{\mu} = \sqrt{\mu_0 \mu_k}$. $\mu = \mu_e \cdot \tau_L$ holds for intense trapping of the minority carriers at any intensity of illumination. s can be determined by studying the spectral distribution of photomagnetic effect and photoconductivity. Further data on recombination and constants characterizing the trapping are obtained from the processes connected with an intensity of illumination variable with time. The author describes the application of the Grosvhlet method of measuring the phase difference between photomagnetic effect and photoconductivity. With an intense electron exchange between trap levels, and conduction band, the difference of the phases of the photomagnetic effect and photoconductivity is connected with the modulation frequency ω of the intensity of illumination by

$$\tau^* \equiv \frac{1}{\omega}\,\mathrm{tg}\,2\varphi = \frac{1}{\omega}\,\frac{\mathrm{Im}\left(\frac{I}{P}\right)^2}{\mathrm{Re}\left(\frac{I}{P}\right)^2} = \tau_k. \qquad (19).$$

For a specimen with a high degree of impurities $(a \gg \Gamma)$, weak intensity of illumination $(p \ll p_0)$, and a variable intensity of the incident light

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$(g^{+} e^{j\omega t})$,

$$\left.\begin{aligned} \frac{\partial n}{\partial t} &= \frac{1}{e}\operatorname{div}\Gamma^{-} - \frac{n}{\tau_0} - \frac{n}{\tau_e} + \frac{n_t}{\tau_e}, \\ \frac{\partial p}{\partial t} &= -\frac{1}{e}\operatorname{div}\Gamma^{+} - \frac{n}{\tau_0} - \frac{p}{\theta_e} - \frac{n_t}{\theta_e}, \\ \frac{\partial n_t}{\partial t} &= -\frac{n_t}{\tau_e} - \frac{n_t}{\theta_e} + \frac{n}{\tau_e} - \frac{p}{\theta_e}. \end{aligned}\right\} \qquad (20)$$

holds for the continuity equation. By measuring the phase shifts between the photomagnetic effect and photoconductivity at various frequencies some combinations of the independent quantities contained therein can be determined. Nonlinear recombination: It is assumed that the volume lifetime and the surface recombination rate depend on the excess carrier concentrations. The ratio of the concentrations of p and n is assumed to be constant and equal to Γ. The diffusion equations in the limiting cases of high and low intensities of illumination are

$$\mathcal{L}_p \frac{d^2 n}{dx^2} - n^{1+q} = 0, \qquad (32) \text{ and}$$

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Determination of the ...

$$\mathcal{L}_\varphi = \frac{kT}{e}\,\frac{\frac{1}{\gamma_e}(n_0+n)^{-1}+\frac{1}{\gamma_h}(p_0+p)^{-1}}{\frac{1}{\mu_e}(n_0+n)^{-1}+\frac{1}{\mu_h}(p_0+p)^{-1}}. \qquad (33),$$

respectively. The expressions for the photomagnetic effect and photoconductivity which hold for the square volume recombination at $\varrho = 1$ are then given. For a cylindrical specimen

$$\mathcal{J} = \frac{2Re g D \sin\varphi\,(\mu_e+\mu_h)\frac{H}{c}}{s+\frac{D}{L}\left[\frac{I_2\left(\frac{R}{L}\right)}{I_1\left(\frac{R}{L}\right)}+\frac{L}{R}\right]}, \qquad (47)$$

$$\sigma = \frac{2Re g L_\varphi(\mu_e+\mu_h)}{s\frac{I_0\left(\frac{R}{L}\right)}{I_1\left(\frac{R}{L}\right)}+\frac{D}{L}}, \qquad (48)$$

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S/181/61/003/005/037/042
B125/B202

Determination of the ...

hold in cylindrical coordinates. D is the diffusion coefficient of the electrons and $I_{\nu}(x) = i^{-\nu}J_{\nu}(ix)$, $J_{\nu}(x)$ holds - Bessel function. The author thanks B. Ya. Moyzhes for supervision and I. I. Farbshteyn and V. A. Petrusevich for discussion of the results. There are 29 references: 14 Soviet-bloc and 15 non-Soviet-bloc.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors Leningrad)

SUBMITTED: December 14, 1960

Card 8/8

43935
G/030/62/002/008/002/005
1046/1246

24.2600

AUTHORS: Subashiyev, V.K. and Ravich, Yu.I.

TITLE: Contribution to the theory of valve photoeffect on p-n junctions

PERIODICAL: physica status solidi, v. 2, no. 8, 1962, 1043-1061

TEXT: The current-voltage characteristics are calculated for an illuminated p-n junction, allowing for an arbitrary spectral composition of the incident light and non-uniform properties of the n- and p-regions. The current flowing across the junction is found to consist of a component which is independent of the light intensity and varies exponentially with the applied voltage, and of a component which is independent of the applied voltage and varies in proportion to the illumination intensity (the dark and the short-circuit currents, respectively). The two components are expressible in terms of a special position function which, being independent of voltage and illumination, is calculated for the following cases: 1. The parameters characterizing the diffusion, the recombination and the drift of minority carriers are constant throughout the p- and the n-regions. 2.The parameter values change as a step-function. 3. A strong electric field

Contribution to the theory of valve photoeffect...

is maintained in the n-region. 4. The thickness of the n-region is small. Certain results of this work can be used in determining the dark current-voltage characteristics of p-n junctions with inhomogeneous p- and n-regions. There are 8 figures.

ASSOCIATION: Institut poluprovodnikov Akademii Nauk SSSR Leningrad (The Institute of Semiconductors, Academy of Sciences USSR, Leningrad)

SUBMITTED: May 18, 1962

Card 2/2

38947
S/181/62/004/007/024/037
B102/B104

24000

AUTHOR: Ravich, Yu. I.

TITLE: The theory of the photomagnetic effect in strong magnetic fields

PERIODICAL: Fizika tverdogo tela, v. 4, no. 7, 1962, 1928-1937

TEXT: The photomagnetic effect in semiconductors is used to record infra-red radiation and, especially by working with the compensation method, to determine parameters of the minority carriers. The application of strong fields improves the accuracy of the method. On the basis of the conditions needed in such experiments the author studies theoretically the influence of a longitudinal electrical field on the non-equilibrium carrier concentration. If this influence is neglected in the compensation method (A. A. Grinberg, FTT, 2, 836, 1960) a greatly different value is obtained for the compensating voltage of the photomagnetic effect in photoconductivity. That field also strongly affects the photomagnetic emf and the volt-ampere characteristics of the specimen in the case of intense illumination. In an unpurified specimen, for this reason, neither a

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positive nor a negative electrical field E is able to compensate the photomagnetic effect if $\mu_n \mu_p H^2/c^2 \gg 1$. ($\mu_{n,p}$ - carrier mobilities). The field effect changes also the E(H) dependence at small field strengths, especially if the mobility of the minority carriers is much greater than that of the majority carriers. Since the trapping levels change the whole shape of the E(H) curve, its shape allows conclusions to be drawn as regards the trapping intensity. In the absence of trapping the mean geometrical carrier mobility can be determined from the critical magnetic field. In intrinsic semiconductors with simple non-degenerate bands and constant relaxation times the E(H) relation is the same as for weak magnetic fields. In strong fields the compensation method yields only approximative results for intrinsic semiconductors and for small velocity of the recombination surface. In the latter type of semiconductors, and also in the case of intense illumination, the longitudinal field reduces the growth rate of the photomagnetic emf with growing H. If at H = 0 the photoconductivity is much smaller than the dark conductivity, then at any H

$$\delta \equiv \frac{b+1}{(bn_0+p_0)d}\int_0^d \Delta n\, dx_2 \ll 1,\ b.$$

The theory of the photomagnetic ...

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B102/B104

wherein $b = \mu_n/\mu_p$, d = sample thickness, $x_{1,2,3}$ are the coordinates. There are 5 figures.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors AS USSR, Leningrad)

SUBMITTED: March 5, 1962

Card 3/3

S/181/62/004/009/013/045
B108/B186

24,7000'

AUTHOR: Ravich, Yu. I.

TITLE: Theory of the photomagnetic effect in p-n junctions

PERIODICAL: Fizika tverdogo tela, v. 4, no. 9, 1962, 2411 - 2415

/B

TEXT: This effect is considered both in p-n junctions and in two adjacently located junctions of different directions in a weak magnetic field. The odd photomagnetic effect in p-n junctions perpendicular to the illuminated surface is due to diffusion of minority carriers in the semiconductor toward the junction. A magnetic field deflects the minority carriers. For weak fields, this effect is proportional to the field strength. In this case, the diffusion equation $\nabla^2 p - p/L_p^2 = 0$ is obtained from the hole current density. L_p is the diffusion path length. By expanding the hole concentration for $d \gg L_p$ in a Fourier series, one obtains for the hole current

$$I_p = -(I_{p0} + I_{p1}H_p + \dots), \qquad (14)$$

$$I_{p0} = \frac{q\kappa b}{w_n} \sum_{k=1}^{\infty} g_k k L_k^2 \left(1 + \frac{sL_k}{D_p}\right)^{-1}. \qquad (15)$$

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$$I_{p1}=\frac{4q\pi b}{w_n^2}\sum_{k=1}^{\infty}g_k k L_k\left(1+\frac{sL_k}{D_p}\right)^{-1}\sum_{\substack{i=1\\ i\neq k}}^{\infty}\frac{i^2L_i^2}{i^2-k^2}\varepsilon(k+i)\left(1+\frac{sL_i}{D_p}\right)^{-1}. \qquad (16)$$

where $g_k = 4g\varepsilon(k)/\pi k$, g is the number of electron hole pairs produced per unit of time and area, s is the surface recombination rate, b is the length of the specimen in the direction of the junction. Analogous expressions are obtained for the electron current. For the photomagnetic potential one obtains

$$V=\frac{2kT}{q}\frac{I_{p1}H_p+I_{n1}H_n}{a_s(i_s+I_{p0}+I_{n0})}, \qquad (21)$$

$$i_s\equiv qb\left(\frac{p_nD_p}{L_p}\,\mathrm{th}\,\frac{w_n}{2L_p}+\frac{n_pD_n}{L_n}\right), \qquad (22)$$

$$a_s\equiv\frac{qb}{i_s}\left(\frac{p_nD_p}{L_p}\,\mathrm{cth}\,\frac{w_n}{2L_p}+\frac{n_pD_n}{L_n}\right). \qquad (23)$$

where w_n is the width of the n-range, considering only the "diffusion"

Theory of the photomagnetic... S/181/62/004/009/013/045
B108/B186

components of the dark current. There are 2 figures. The most important English-language reference is: W. Dunstan, Proc. Phys. Soc., 77, 459, 1961.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors AS USSR Leningrad)

SUBMITTED: April 11, 1962

JD

Card 3/3

S/109/62/007/006/010/024
D271/D308

9,4160

AUTHOR: Ravich, Yu. I.

TITLE: Theory of a photo-cell with an inhomogeneous front layer and a strong field inside the latter

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 6, 1962, 1002-1008

B

TEXT: A photo-cell is considered in which the parameters characterizing drift, diffusion and recombination are variable within quasi-neutral regions; space recombination is taken into account and non-monochromatic irradiation is assumed. The equation of the hole current in the front layer is written out as a sum of two components of which one is due to diffusion and the other to electric field created by inhomogeneous doping in the layer and by the surface charge. Hole current is expressed in terms of a function $\alpha(x)$ independent of voltage and irradiation so that the current is a sum of dark and short-circuit currents; this ceases to be true when the dimensions of the region of space charge of the p-n junc-

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S/109/62/007/006/010/024
D271/D308

Theory of a photo-cell ...

tion depend on voltage or irradiation; ohmic voltage drop in the quasi-neutral region creates additional electric field on the n-side. Full current in the cell, for arbitrary values of voltage and irradiation, can be evaluated when $\alpha(x)$ is known. The case is considered when carriers move towards the junction mainly by drift, and not by diffusion; approximate expressions for current and excess hole density are offered, valid over only one part of the front layer; the limits of validity are given. A strong electric field reduces recombination losses of the short-circuit current by a factor dependent on dimensions; values of parameters in the immediate vicinity of the surface are decisive for the surface recombination, parameters averaged over the layer are of importance for the space recombination. The case of monochromatic irradiation is also discussed. The relation between the true velocity of surface recombination and the diffusion coefficient can be determined from the spectral dependence of the short-circuit current.

B

SUBMITTED: August 10, 1961

Card 2/2

EWT(1)/EWO(k)/EWP(q)/EWT(m)/T-2/BDS/EEC(b)-2/ES(t)-2

L 12821-63
AFFTC/ASD/ESD-3 Pz-4/Pt-4 JD/IJP(C) S/2927/62/000/000/0266/0271
75
73

ACCESSION NR: AT3003017

AUTHOR: Ravich, Yu. I.

TITLE: Phototriode theory [Report at the All-Union Conference on Semiconductor Devices, Tashkent, 2-7 October, 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v poluprovodnikakh. Tashkent, Izd-vo AN UzSSR, 1962, 266-271

TOPIC TAGS: phototriode, phototriode theory

ABSTRACT: These assumptions are made: (1) local quasi-neutrality is observed in the emitter, collector, and base regions; the processes are characterized by the time constants materially exceeding the Maxwell relaxation time; (2) minority carrier concentration is much lower than the majority carrier concentration; (3) the problem is single-dimensional; (4) the emitter and collector region thicknesses are much greater than the corresponding diffusion lengths; (5) the applied-voltage drop takes place only across p-n junctions. Diffusion equations are solved for the current density in the phototriode, and the solution is examined. The theoretical current-voltage characteristics are considered, as well as the

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L 12821-63

ACCESSION NR: AT3003017

2

effects of a pulling field and the inertial properties. "The author is thankful to A. I. Frimer and B. Ya. Moyzhes for offering this topic and for the discussing the results." Orig. art. has: 2 figures and 14 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 15May63 ENCL: 00

SUB CODE: PH, GE NO REF SOV: 001 OTHER: 005

Card 2/2

L 12825-63 EWT(l)/EWG(k)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3 Pz-4 AT/IJP(C)

S/2927/62/000/000/0282/0290

ACCESSION NR: AT3003021

64

AUTHOR: Subashiyev, V. K.; Ravich, Yu. I.

TITLE: Photovoltaic effect of a p-n junction with an arbitrary generation function and an inhomogeneous front wall [Report at the All-Union Conference on Semiconductor Devices, Tashkent, 2-7 October 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v poluprovodnikakh. Tashkent, Izd-vo AN UzSSR, 1962, 282-290

TOPIC TAGS: photovoltaic effect, p-n junction theory

ABSTRACT: The existing photovoltaic cell theories hold that: (a) the field in the near-junction region is zero; (b) mobility and lifetime are constant; (c) light is monochromatic. However, in practice photovoltaic cells (a) are manufactured by diffusion methods entailing nonhomogeneity of the front wall and (b) are used with a heterochromatic light. The article tries to fill if partially the above gap in the theory. In the p-n junction, the p-region is assumed to be very extensive so that the problem can be considered as single-dimensional. The p-n junction is assumed to be narrow as compared to the free-path length and the diffusion length.

Card 1/2

0

L 12825-63

ACCESSION NR: AT3003021

A steady-state case and a moderate heterochromatic illumination are considered. Differential equations that describe p-current density and p-concentration distribution in the n-region are considered and solved for a simplified case. Similar solutions are obtained for the p-region. A formula for the total current is developed which shows that the current consists of two components, one depending on the voltage across the p-n junction and another, on the illumination. A "drift photovoltaic cell" is considered; it has a strong field in the front wall which caused the carriers drift from their generation place to the junction. Finally, a p-n junction with a uniform field in the adjacent regions is considered. Orig. art. has: 1 figure and 33 formulas.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 15May63	ENCL: 00
SUB CODE: PH	NO REF SOV: 005	OTHER: 002

Card 2/2

ACCESSION NR: AP4038621 S/0109/64/009/004/0688/0692

AUTHOR: Ravich, Yu. I.

TITLE: Calculating the longitudinal photoelectric effect occurring in a two-coordinate photocell

SOURCE: Radiotekhnika i elektronika, v. 9, no. 4, 1964, 688-692

TOPIC TAGS: photoelectric effect, longitudinal photoelectric effect, photocell, two coordinate photocell, photocell theory

ABSTRACT: The longitudinal photoelectric effect in a circular photocell having its four contacts at the edges and illuminated by a two-coordinate-positioned beam of light is calculated; a linear approximation is used. It is found that a current $i^{(1)}$ passing through contact I produces these potentials across contacts I-III:

$$V_I^{(1)} = R_1 i^{(1)},\ V_{II}^{(1)} = R_2 i^{(1)},\ V_{III}^{(1)} = R_3 i^{(1)},$$

$$R_i \equiv \frac{2\rho_0}{\pi\alpha b w} \sum_{n=0}^{\infty} \frac{\frac{1}{n} \sin \frac{nb}{R} I_n(\alpha R)}{I_{n+1}(\alpha R) + I_{n-1}(\alpha R)} e_{in},$$

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ACCESSION NR: AP4038621

$$\text{where } \varepsilon_{in} = \begin{cases} 1, & i = 1, \\ 0, & i = 2, n \text{ odd} \\ (-1)^{n/2}, & i = 2, n \text{ even} \\ (-1^{n}, & i = 3. \end{cases}$$

These formulas hold true with a low photosignal, with no extensive flare spots or external emf's. Two beam coordinates may be determined from the measured photo-emf across the p-n junction and two longitudinal photo-voltages. "The author is grateful to A. I. Frimer and I. I. Taubkin for their suggestion of the topic and valuable hints." Orig. art. has: 2 figures and 20 formulas.

ASSOCIATION: none

SUBMITTED: 10Feb63	DATE ACQ: 05Jun64	ENCL: 00
SUB CODE: EM	NO REF SOV: 003	OTHER: 005

L 65244-65 EWT(l)/EWT(m)/T/EWP(b)/EWA(h)/EWP(t) IJP(c) AT/JD

ACCESSION NR: AP5012598 UR/0181/65/007/005/1598/1598

46
B

AUTHOR: Ravich, Yu. I. 44,55

TITLE: Concerning the article by Ya. A. Ugay 44,55 and Yu. P. Khukhryanskiy 44,55

SOURCE: Fizika tverdogo tela, v. 7, no. 5, 1965, 1598

TOPIC TAGS: germanium, gallium, solid solution, pn junction, valence band

ABSTRACT: The original 21 article 21 (FTT v. 6, 3, 1964) dealt with a method proposed for the investigation of the solubility of gallium in solid germanium. Letters were subsequently received by the editors of the source journal to the effect that Ugay and Khukhryanksiy made incorrect assumptions concerning the saturation current in the pn junction 44,55 and concerning the width of the forbidden band of strongly doped Ge, so that the result of their paper does not agree with the present known experimental facts. The letters were reviewed for the editors by Yu. A. Tkhorik.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors, AN SSSR) 44,55

SUBMITTED: 10Jan65 ENCL: 00 SUB CODE: SS

NR REF SOV: 002 OTHER: 000

713
Card 1/1

L 2519-66 EWT(1)/T/EWA(h) IJP(c) AT

ACCESSION NR: AP5014587 UR/0181/65/007/006/1821/1831

38

32

B

AUTHOR: Ravich, Yu. I. 44,55

TITLE: Temperature dependence of the effective mass and influence of two-phonon processes on the mobility of semiconductors with narrow forbidden bands.

21,44,55

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1821-1831

TOPIC TAGS: semiconductor carrier, electron mobility, hole mobility, forbidden band, forbidden zone width, phonon interaction

ABSTRACT: The purpose of the investigation was to determine the connection between the temperature variations, brought about by the thermal oscillations of the lattice, of the effective mass and the width of the forbidden band in semiconductors with a narrow forbidden band (on the order of 0.2 — 0.4 eV) (InSb, InAs, PbTe, PbSe, and PbS). The temperature-induced change in the effective mass, connected with the electron-phonon interaction, is calculated as a function of the temperature variation of the width of the gap. It is assumed that the extrema of the electron and hole bands are located in a single point in k-space, and that the effective mass of the electrons is governed only by the interaction of these bands. The shift of energy levels is calculated by perturbation theory without account of the wave-

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L 2519-66

ACCESSION NR: AP5014587

6

function damping that leads to the smearing of the levels. It is shown that the influence of the two-phonon processes on the mobility reduces essentially to a change of the effective mass in the expression for the mobility due to single-phonon scattering. It is shown that although individual calculations of the change of the effective mass and of change of the width of the forbidden band are difficult, the connection between the two quantities is simple if the forbidden band is narrow compared with the allowed band. The calculations are carried out for InSb, using the model proposed by E. O. Kane (J. Phys. Chem. Sol. v. 1, 249, 1956), but the results are applicable to lead salts, too. Kane's results are extended to include nonzero temperatures. In the region where the bands are parabolic, the relative change in the effective mass is equal to the relative change in the width of the forbidden band. "The author thanks B. Ya. Moyzhes for help". Orig. art has: 31 formulas.

44,55

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

44,55

SUBMITTED: 30Nov64 ENCL: 00 SUB CODE: SS, NP

NR REF SOV: 007 OTHER: 016

Card 2/2

L 46830-66 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6015463 (N) SOURCE CODE: UR/0181/66/008/005/1455/1460

AUTHOR: Dubrovskaya, I. N.; Ravich, Yu. I.

40
39
B

ORG: Institute of Semiconductors, AN SSSR, Leningrad (Institut poluprovodnikov AN SSSR)

TITLE: Investigation of the nonparabolic nature of the conductivity region of PbTe by the method of measuring the thermal emf in a strong magnetic field

77 27

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1455-1460

TOPIC TAGS: conductivity region, thermal emf, strong magnetic field, lead base alloy, tellurium containing alloy

ABSTRACT: A measurement is made of the thermal emf in a strong magnetic field at a temperature close to 80K in n-PbTe with electron concentrations from $2 \cdot 10^{18}$ to $1 \cdot 10^{20} cm^{-3}$. A determination is made of the density of the state as a function of energy and the Fermi level as a function of the concentration. The curves obtained are compared with the results obtained by employing two simple models describing the nonparabolic nature of the conductivity region. Values are obtained for the effective width of the forbidden region of interaction and the effective mass of the density of state on the bottom of the conductivity region. The authors thank T. S. Stavitskuya for providing the specimens, B. A. Yefimov and S. S. Shalyta for

Card 1/2

L 46830-66

ACC NR: AP6015463

discussing the results, and Ye. G. Strel'chenko for making available his work (FTT, 8, 965, 1966) prior to publication. Orig. art. has: 15 formulas, 3 figures, and 1 table.

SUB CODE: 20/ SUBM DATE: 04Oct65/ ORIG REF: 012/ OTH REF: 009

Card 2/2 blg

L 05628-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6024500 SOURCE CODE: UR/0181/66/008/007/2247/2248

62

AUTHOR: Dubrovskaya, I. N.; Nensberg, Ye. D.; Nikitina, G. V.; Ravich, Yu. I. 60

ORG: Institute of Semiconductors, AN SSSR, Leningrad (Institut poluprovodnikov AN SSSR) B

TITLE: Investigation of the nonparabolicity of the valence band of PbTe by the method of measuring the thermal emf in a strong magnetic field 27 21

SOURCE: Fizika tverdogo tela, v. 8, no. 7, 1966, 2247-2248

TOPIC TAGS: lead compound, telluride, valence band, thermal emf, semiconductor carrier, carrier density, forbidden band width

ABSTRACT: In analogy with an earlier investigation of the conduction band of PbTe (FTT v. 8, 1455, 1966), the authors present the results of an investigation of the valence band of this material. The measurements were made at liquid-nitrogen temperature using samples with hole density from 5.4×10^{17} to 4×10^{19} cm^{-3}. Plots of the Fermi level against the hole density and of the density of states against the energy are presented. The obtained dependence of the density of states is compared with the values calculated on the basis of two simple models, that of E. O. Kane (J. Phys. Chem. Sol. v. 1, 249, 1957) and that of M. H. Cohen (Phys. Rev. v. 127, 387, 1963). Both models gave satisfactory agreement with experiment. The effective mass of the state density m_d near the top of the valence band is found to be $0.13m_0$ for both models. The effective width of the forbidden band was found to be 0.12 ev for the Kane model

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L 05028-67

ACC NR: AP6024500

0

and 0.08 ev for the Cohen model. Both are smaller than the optical width of the forbidden band. The authors thank S. S. Shalyt and B. A. Yefimova for help with the work. Orig. art. has: 2 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 21Jan66/ ORIG REF: 001/ OTH REF: 003

Card 2/2

RAVICH-BIRGER, Helen D.

"Biological Laws in Microbic Variability." (p. 183) by Ravich-Birger, Helen D.

SO: Biological Journal (Biologicheskii Zhurnal) Vol. V, 1936, No. 2

RAVICH-BIRGER, Ye.D.; SHATROV, I.I. kandidat meditsinskikh nauk, direktor; VYGODCHIKOV, G.V., professor, nauchnyy rukovoditel'.

Hapten reaction as a method of identifying dysentery microbes when few are present. Zhur.mikrobiol.epid.i immun. no.4:42-46 Ap '53. (MLRA 6:6)

1. Moskovskiy gorodskoy institut epidemiologii i bakteriologii.

(Dysentery) (Antigens and antibodies)

The reaction withhapten establishes the presence of antigen from live microbes and is therefore equivalent to other bacteriological methods as far as detection of these microbes is concerned. The hapten reaction, applied after seeding on a Zh medium, is superior to other methods when the quantity of dysentery bacilli is small. It is very useful for diagnosing hidden cases of dysentery and for determining when a patient has ceased eliminating bacilli. The new method should be applied at intestinal diseases cabinets and wards for children suffering from chronic dysentery.

252T20

UTEVSKIY, N.L. [author]; RAVICH-BIRGER, Ye.D. [reviewer].

"Elements of medical microbiology and microbiological techniques." N.L. Utevskii. Reviewed by E.D.Ravich-Birger. Zhur.mikrobiol.epid.i immun. no.8:93-94 Ag '53. (MLRA 6:11)

(Microorganisms) (Utevskii, N.L.)

~~*RAVICH-BIRGER, YE. D.~~ ~~FD 131~~

USSR/Medicine - Dysentery

Card 1/1

Authors : *Ravich-Birger, Ye. D. and Zarutskaya, V. G.

Title : Data concerning the investigation of the Sonne bacillus. I. Microbiological characteristics of Sonne dysentery microorganisms

Periodical : Zhur. mikrobiol. epid. i immun. 4, 40-45, Apr 1954

Abstract : This is the first in a series of 3 reports on the Sonne dysentery bacillus. It discusses the microbiological characteristics of 2 types of colonies formed by Sonne dysentery bacilli, i.e. a round form and a flat form. It shows that, although these 2 forms are morphologically distinct, their fermentative activity, virulence, and toxicity are almost identical. It indicates the value of these characteristics in diagnosis and in the identification of the Sonne bacilli. The report is illustrated by 4 photographs and the results of the microbiological investigations are presented on 3 graphs. No references are cited.

Institution : Moscow Scientific-Research Institute of Vaccines and Serums (Director - M. G. Kashtanova, Scientific Head- V. A. Chernokhvostov, Head of the Division of Intestinal Infections - *Ye. D. Ravich-Birger)

Submitted : July 3, 1953

RAVICH-BIRGEV, Ye.D. MESHALOVA, V.N.

Method of determining enteric bacteria. Lab.delo no.1:15-17
Jan-Feb '55. (MLRA 8:8)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta epidemiologii mikrobiologii i gigiyeny (dir.M.G. Kashtanova, nauchnyy rukovoditel' prof. V.A.Chernokhvostov, zav. otdelom-prof. Ye.D. Ravich-Birger)

(BACTERIA,
enteric, determ)
(INTESTINES, bacteriology
determ. of enteric bact.)

RAVICH-BIRGER, Ye.D.; POTAPCHIK, Yu.A.

Effect of variability of Shigella sonnei on their immunogenicity.
Zhur. mikrobiol. epid. i immun. no.1:98-102 Ja '55. (MLRA 8:2)

1. Iz Moskovskogo instituta vaktsin i syvorotok (dir. M.G.Kashtanova, nauchnyy rukovoditel' prof. V.A.Chernokhvostov)
(SHIGELLA,
sonnei, eff. of variability on immun. factors)

Translation M-1054. 30 Mar 56

RAVICH-BIRGER, Ye.D.; KUZNETSOVA, T.A.

Specificity of phagocytosis with Serebriiskii's antigens in dysentery. Zhur.mikrobiol.epid.i immun. no.3:39-43 Mr '55. (MLRA 8:7)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny (dir. M.G.Kashtanova, nauchnyy rukovoditel' prof. V.A. Chernokhvostov).
(DYSENTERY, BACILLARY, diagnosis,
serol., phagocytosis)
(PHAGOCYTOSIS,
diag. of bacillary dysentery)

RAVICH-BIRGER, Ye.D.; BLYUMENTAL', K.V.; BORISOVA, L.V.; MAMONOVA, I.S.

Immunological indexes in children with various courses of convalescence following dysentery. Zhur.mikrobiol.epid.i immun. no.3: 49-54 Mr '55. (MLRA 8:7)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny i pediatricheskoy kliniki Tsentral'nogo instituta usovershenstvovaniya vrachey.

(DYSENTERY, BACILLARY, immunology,
in convalescence in child.)
(CONVALESCENCE, in various diseases,
dysentery, bacillary, immunol. indices in child.)

USSR/Medicine - Immunology

FD-3305

Card 1/1 : Pub. 148-1/24

Author : Ravich-Berger, Ye. D.

Title : The problem of the bacteriological diagnosis of pathogenic species of microorganisms of the enteric group in the light of new data concerning their antigen structure

Periodical : Zhur. mikro. epid. i immun. 10, 3-11, Oct 1955

Abstract : The genus and species composition and the antigen structure of the microorganisms in the enteric group are discussed. Methods of differentiating between them serologically and biochemically through the use of selective culture media are outlined. The data is summarized in two tables. 20 Soviet and 21 non-Soviet references are cited.

Institution :

Submitted : January 21, 1955

GEKKER, V.D.; RAVICH-BIRGER, Ye.D.; BELAYA, Yu.A.

Place of Newcastle bacilli in the classification of Shigella.
Zhur. mikrobiol., epid. i immun. 43 no. 1:17-19 Ja '66
(MIRA 19:1)

1. Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR. Submitted June 18, 1964.

MATS, L.I., prof., red.; RAVICH-BIRGER, Ye.D., red.

[Problems of sanitary bacteriolcgy and virology] Voprosy sanitarnoi bakteriologii i virusologii. Moskva, Meditsina, 1965. 263 p. (MIRA 18:5)

1. Akademiya meditsinskikh nauk SSSR, Moscow. 2. Institut obshchey i kommunal'noy gigiyeny imeni A.N.Sysina AMN SSSR (for Mats).

RAVICH-BIRGER, Ye.D.; TROITSKIY, V.L.; GEKKER, V.D.

Classification and taxonomy of dysenterial bacteria. Zhur.mikrobiol. epid. i immun. 32 no.6:25-27 Je '61. (MIRA 15:5)

1. Iz Gosudarstvennogo kontrol'nogo instituta meditsinskikh biologicheskikh preparatov imeni Tarasevicha i Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(BACTERIOLOGY—CLASSIFICATION) (SHIGELLA)